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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/706,110	11/03/2000	Vyacheslav D. Grinshpun	60170A	5865

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THE DOW CHEMICAL COMPANY  
INTELLECTUAL PROPERTY SECTION  
P. O. BOX 1967  
MIDLAND, MI 48641-1967

EXAMINER
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AHMED, SHEEBA

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-9

<b>Office Action Summary</b>	<b>Application No.</b> 09/706,110	<b>Applicant(s)</b> GRINSHPUN ET AL.	
	<b>Examiner</b> Sheeba Ahmed	<b>Art Unit</b> 1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 April 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-13 and 16-33 is/are pending in the application.
- 4a) Of the above claim(s) 1-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 16-25 and 31-33 is/are rejected.
- 7) ☐ Claim(s) 26-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. Amendments to claims 16-22 have been entered in the above-identified application. Claims 14 and 15 have been canceled and new claims 25-33 have been added. Claims 1-13 are withdrawn from consideration. **Claims 16-33 are now under consideration.**

The indication of allowable subject matter in original claim 16 is hereby withdrawn in view of the newly discovered reference to Tusim et al. (US 6,213,540 B1) and the new grounds of rejection are set forth below. Any inconvenience to the Applicants is regretted.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 is dependent on claim 16 and states that "the film-form material is a cross-linkable polyol-isocyanate blend and the foam further comprises at least one cross link promoter....". However, claim 16 recites that the hollow extruded stands have different polymeric compositions wherein each composition is selected from the Markush group recited in claim 16. Therefore, it is unclear from the claim language of

claim 20 and from the Specification whether claim 20 recites a structure wherein at least some of the strands are formed from "a cross-linkable polyol-isocyanate blend" and others are formed from one of the film-forming materials recited in the Markush group of claim 16. Appropriate amendment or clarification is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 16-18, 21, 22, 25, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baxter et al. (GB 1,061,702) in view of Tusim et al. (US 6,213,540 B1).

Baxter et al. (GB 1,061,702) discloses insulating materials for building comprising an extruded polyethylene sheet having a cross section in the form of a rectangular network of interconnected foamed polyethylene elements so that in effect the material consists of a bundle of hollow tubes having foamed polyethylene walls (*thus meeting the limitations that the structure comprises a plurality of coalesced hollow extruded strands as recited in **claim 16** given that the term coalesced is defined as a structure that arises from the combination of distinct elements and in this case the bundle arises from the combination of the hollow tubes of foamed polyethylene*). The overall density of the sheet is 1.6 pounds per cubic foot and that of the individual foamed elements is 3.7

Art Unit: 1773

pounds per cubic foot (*thus meeting the limitations of **claim 21***) (Column 1, lines 9-12 and Column 2, lines 59-72). The individual foamed elements have a closed-cell structure (*thus meeting the limitations of **claim 17** given that the Examiner takes the position that 100% of the foam disclosed by Baxter et al. has a closed cell structure*) and the average diameter of the cells is 0.002 to 0.1 inch (*equivalent to 50.8 to 2540 micrometers and thus meeting the limitations of **claims 31-33***) (Column 3, lines 38-41). The Examiner takes the position that the foam insulating material disclosed by Baxter et al. must be both sound and thermally insulating to a certain degree and thus meets the limitations of **claim 22**.

Baxter et al. do not teach that their extruded *strands have different polymeric compositions*.

However, Tusim et al. disclose energy and impact-absorbing thermoplastic foams (Column 1, lines 8-12) that may be prepared by extrusion foaming a molten thermoplastic composition utilizing a die including a multiplicity of orifices such that the surfaces of the streams of molten extrudate contact during the foaming process and adhere to one another to form a unitary structure, i.e., an extruded strand foam. The thermoplastic foam may be open or closed cell given that the percentage of open cells can be controlled by selecting the appropriate blowing agents, additives, polymers, and processing parameters (Column 5, lines 31-47). Suitable foamable thermoplastic compositions include polyolefins such as polyethylene and polypropylene, copolymers of ethylene or propylene with an unsaturated monomers and polyesters, polyamides, polycarbonates and polystyrenes (Column 2, lines 65-67 and Column 3, lines 1-33).

Tusim et al. show that polyolefins such as polyethylene and polypropylene, copolymers of ethylene or propylene with an unsaturated monomers and polyesters, polyamides, polycarbonates and polystyrenes are equivalent foamable and extrudable compositions known in the art. Therefore, because these foamable compositions were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute one for any of the other, i.e., it would have been obvious to one of ordinary skill in the art to replace some of the extruded polyolefin strands taught by Baxter et al. with extruded strands of copolymers of ethylene or propylene with an unsaturated monomers, polyesters, polyamides, polycarbonates and polystyrenes. Furthermore, it would have been obvious to one having ordinary skill in the art to optimize the percentage of open cells by selecting the appropriate blowing agents, additives, polymers, and processing parameters.

4. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeBlander (US 6,007,890) in view of Baxter et al. (GB 1,061,702) and Tusim et al. (US 6,213,540 B1).

DeBlander discloses an acoustic insulating panel having a soft core with cavities in contact with two outer facings (See Abstract). The soft core may be an elastic, closed cell, crosslinked and non-crosslinked polyethylene-based foam having a plurality of coalesced expanded strands of foamed polyethylene polymer (Column 2, lines 63-67). The outer facings may be any material used to make insulating panels and examples include gypsum plasterboards and plywood (Column 58, lines 1-19).

DeBlander does not teach that their soft core is a plurality of coalesced hollow strands of different polymeric compositions.

However, Baxter et al. (GB 1,061,702) discloses insulating materials for building comprising an extruded polyethylene sheet having a cross section in the form of a rectangular network of interconnected foamed polyethylene elements so that in effect the material consists of a bundle of hollow tubes having foamed polyethylene walls *(thus meeting the limitations that the structure comprises a plurality of coalesced hollow extruded strands given that the term coalesced is defined as a structure that arises from the combination of distinct elements and in this case the bundle arises from the combination of the hollow tubes of foamed polyethylene)*. The individual foamed elements have a closed-cell structure (Column 3, lines 38-41) and this insulating material is flexible, can be stored in rolls, is non-dusting, safe and easy to cut to size (Column 3, line 64 and Column 4, lines 1-3). On the other hand, Tusim et al. disclose energy and impact-absorbing thermoplastic foams (Column 1, lines 8-12) that may be prepared by extrusion foaming a molten thermoplastic composition utilizing a die including a multiplicity of orifices such that the surfaces of the streams of molten extrudate contact during the foaming process and adhere to one another to form a unitary structure. The thermoplastic foam may be open or closed cell given that the percentage of open cells can be controlled by selecting the appropriate blowing agents, additives, polymers, and processing parameters (Column 5, lines 31-47). Suitable foamable thermoplastic compositions include polyolefins such as polyethylene and polypropylene, copolymers of ethylene or propylene with an unsaturated monomers and

Art Unit: 1773

polyesters, polyamides, polycarbonates and polystyrenes (Column 2, lines 65-67 and Column 3, lines 1-33).

Accordingly, it would have been obvious to one having ordinary skill in the art to replace the soft core of an elastic, closed cell, crosslinked and non-crosslinked polyethylene-based foam having a plurality of coalesced expanded strands of foamed polyethylene polymer, as taught by DeBlander, with an extruded sheet consisting of a bundle of hollow tubes having foamed walls of different compositions, as taught by Baxter et al. and Tusim et al., given that Baxter et al. specifically teach that their extruded foam consisting of a bundle of hollow tubes is flexible, can be stored in rolls, is non-dusting, safe and easy to cut to size (Column 3, line 64 and Column 4, lines 1-3).

5. Claims 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baxter et al. (GB 1,061,702) in view of Tusim et al. (US 6,213,540 B1) and Malone (US 4,824,720).

Baxter et al. discloses insulating materials for building comprising an extruded polyethylene sheet having a cross section in the form of a rectangular network of interconnected foamed polyethylene elements so that in effect the material consists of a bundle of hollow tubes having foamed polyethylene walls (*thus meeting the limitations that the structure comprises a plurality of coalesced hollow extruded strands given that the term coalesced is defined as a structure that arises from the combination of distinct elements and in this case the bundle arises from the combination of the hollow tubes of foamed polyethylene*). The individual foamed elements have a closed-cell structure



Art Unit: 1773

(Column 3, lines 38-41) and this insulating material is flexible, can be stored in rolls, is non-dusting, safe and easy to cut to size (Column 3, line 64 and Column 4, lines 1-3). On the other hand, Tusim et al. disclose energy and impact-absorbing thermoplastic foams (Column 1, lines 8-12) that may be prepared by extrusion foaming a molten thermoplastic composition utilizing a die including a multiplicity of orifices such that the surfaces of the streams of molten extrudate contact during the foaming process and adhere to one another to form a unitary structure. The thermoplastic foam may be open or closed cell given that the percentage of open cells can be controlled by selecting the appropriate blowing agents, additives, polymers, and processing parameters (Column 5, lines 31-47). Suitable foamable thermoplastic compositions include polyolefins such as polyethylene and polypropylene, copolymers of ethylene or propylene with an unsaturated monomers and polyesters, polyamides, polycarbonates and polystyrenes (Column 2, lines 65-67 and Column 3, lines 1-33).

Baxter et al. do not disclose that their insulating material further comprises a plurality of solid foamed strands.

However, Malone discloses foamed products comprising a plurality of coalesced distinguishable expanded strands (Column 1, lines 11-13) of a thermoplastic composition (Column 2, lines 42-47) and having improved cushioning properties at low static loadings (Column 2, lines 16-19). Examples of the thermoplastic composition include copolymers of ethylene and a copolymerizable polar monomer (Column 3, lines 57-65). The foams are prepared forcing a molten extrudate through a die plate

Art Unit: 1773

comprising small holes (*thus indicating that the strands produced are solid and not hollow*) (Column 4, lines 53-55).

Accordingly, it would have been obvious to one having ordinary skill in the art to add a plurality of solid coalesced distinguishable expanded strands to the insulating material taught by Baxter et al. given that Malone teaches that solid coalesced distinguishable expanded strands improve cushioning properties at low static loads.

#### ***Allowable Subject Matter***

6. Claims 26-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Dependent claim 26 recites a cellular foam comprising a plurality of coalesced, hollow extruded strands wherein the strands have different polymeric compositions and each composition is at least one film-forming material selected from olefin homopolymers, olefin copolymers, alkylene aromatic polymers and copolymers, polyesters and copolymers, polycarbonates, polyamides, polyimides, halogenated olefin polymers and copolymers, natural polymers, proteins, polysaccharides, thermoplastic polyurethanes, and blends of polystyrene and ethylene/styrene interpolymer, wherein at least some strands are composed of two or more dissimilar materials, wherein said materials are polymeric, organic or inorganic materials, and wherein one of the

dissimilar materials is the polymeric composition that comprises the strand and the other dissimilar material is a layer disposed on the inner surface of the hollow strand.

Dependent claim 27 recites a cellular foam comprising a plurality of coalesced, hollow extruded strands wherein the strands have different polymeric compositions and each composition is at least one film-forming material selected from olefin homopolymers, olefin copolymers, alkylene aromatic polymers and copolymers, polyesters and copolymers, polycarbonates, polyamides, polyimides, halogenated olefin polymers and copolymers, natural polymers, proteins, polysaccharides, thermoplastic polyurethanes, and blends of polystyrene and ethylene/styrene interpolymer, wherein at least some strands are composed of two or more dissimilar materials, wherein said materials are polymeric, organic or inorganic materials, and wherein one of the dissimilar materials is the polymeric composition that comprises the strand and the other dissimilar material is a layer disposed on an external surface of the hollow strand.

Claims 28 -30 are, either directly or indirectly, dependent on claim 26 and hence incorporate all the limitations of claim 26.

The prior art fails to disclose or render obvious a cellular foam comprising a plurality of coalesced, hollow extruded strands wherein the strands have different polymeric compositions. The closest prior art, Baxter et al. (GB 1,061,702), discloses insulating materials for building comprising an extruded polyethylene sheet having a cross section in the form of a rectangular network of interconnected foamed polyethylene elements so that in effect the material consists of a bundle of hollow tubes having foamed polyethylene walls and hence fails to *disclose or renders obvious a*

Art Unit: 1773

*structure comprising a bundle of hollow tubes wherein at least some strands are composed of two or more dissimilar materials such that one of the dissimilar materials is the polymeric composition that comprises the strand and the other dissimilar material is a layer disposed on the inner or an external surface of the hollow strand.*

### **Conclusion**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is (703)305-0594. The examiner can normally be reached on Mon-Fri 8am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703)308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-5408 for regular communications and (703)305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-5665.



Sheeba Ahmed  
Art Unit 1773  
July 26, 2003

